

Claims

[c1] What is claimed is:

1. A control system comprising: Having the following four components; i) distributed logic, ii) fault tolerance, iii) security, and iv) distributed control; and A plurality of interconnected control units.
2. A control system in Claim 1 further comprising said components being mutually exclusive.
3. A control system in Claim 1 further comprising said Distributed control consisting of a plurality of interconnected control units, each performing specific task or subtasks.
4. A control system in Claim 1 further comprising if one of said control units fails to perform a task or subtask that task or subtask is passed to and executed by another control unit.
5. A control system in Claim 1 further comprising said Distributed logic is a set of rules that determine the relations between the control units.
6. A control system in Claim 1 further comprising each control unit adopts a pending task or subtask that is most suitable for its processing abilities.
7. A control system in Claim 1 further comprising a logical organizational unit consisting of a logic control units with the following attributes; Tasks or subtasks may be performed on a plurality of control units as if on a single control unit; May comprise a single control unit; May comprise of a plurality of control unit; May enclose other Logical Control Units; A control unit may belong to a plurality of Logical Control Units; and All control units in a logic control unit have equal hierarchy.
8. A control system in Claim 1 further comprising said Distributed logic is a set of dynamic rules that develop automatically from the operation of said system to determine the relations between the control units.
9. A control system in Claim 1 further comprising said fault tolerance consisting of two parts: Detection of faulty system components; and The automatic substitution of faulty system components.
10. A control system in Claim 1 further comprising said fault tolerance uses a peer based means for fault detection.
11. A control system in Claim 1 further comprising said fault tolerance uses

virtual control unit replacement in which: A faulty control unit is told to suspend operation; The faulty control unit is reported as faulty to system; Another control unit capable of executing the faulty control units tasks or subtasks requests to execute them; Said faulty control unit will transfer its current task or subtask to requesting control unit; and Said requesting control unit will execute the tasks or subtasks.

12. A control system in Claim 1 further comprising said security consisting of having a secure communication protocols implementing data encryption and controller authentication means

13. A method for a TRUE distributed control system, the method comprising the steps of: Having the following four components; v)distributed logic, vi)fault tolerance, vii)security, and viii)distributed control; and Having a plurality of interconnected control units.

14. The method in Claim 13 further comprising said components being mutually exclusive.

15. The method in Claim 13 further comprising said Distributed control consisting of a plurality of interconnected control units, each performing specific subtasks or tasks.

16. The method in Claim 13 further comprising if one of said control units fails to perform a task or subtask that task or subtask is passed to and executed by another control unit.

17. The method in Claim 13 further comprising said Distributed logic is a set of rules that determine the relations between the control units.

18. The method in Claim 13 further comprising each control unit adopts a pending task or subtask that is most suitable for its processing abilities.

19. The method in Claim 13 further comprising having a logical organizational unit consisting of a logic control units with the following attributes; Task or subtask may be performed on a plurality of control units as if on a single control unit; May comprise a single control unit; May comprise of a plurality of control units; May enclose other Logical Control Units; A control unit may belong to a plurality of Logical Control Units; and All control units in a logic control unit have equal hierarchy.

20. The method in Claim 13 further comprising said Distributed logic is a set of

dynamic rules that deveop automatically from the operation of said system to determine the relations between the control units.

21. The method in Claim 13 further comprising said fault tolerance consisting of two parts: Detection of faulty system components; and The automatic substitution of faulty system components.

22. The method in Claim 13 further comprising said fault tolerance uses a peer based means for fault detection.

23. The method in Claim 13 further comprising said fault tolerance uses virtual control unit replacement in which: A faulty control unit is told to suspend operation; The faulty control unit is reported as faulty to system; Another control unit capable of executing the faulty control units tasks or subtasks requests to execute them; Said faulty control unit will its current task or subtask to requesting control unit; and Requesting control unit will execute the tasks or subtasks.

24. The method in Claim 13 further comprising said security consisting of having a secure communication protocols implementing data encryption and having a controller authentication means

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